

## IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims

1           1-100. (Canceled)

1           101. (New) A method for providing printer recognition and management of a  
2 print job entity, comprising:

3           establishing a repository of attributes and status information associated with each  
4 print job that passes through a printer system;

5           providing an interface to a plurality of components to allow access to the  
6 attributes and status information in the repository by the plurality of components;

7           establishing a job monitor for managing the repository of attributes and status  
8 information associated with each print job, for responding to a call by a printer  
9 component and for managing interactions between printer components in order to control  
10 the processing of the job; and

11          fetching, jobs, using, the job monitor, in an order that is dependent upon the  
12 calling component.

1           102. (New) The method of claim 101 wherein the interface comprises at least  
2 one of a Web Page channel, a multiplexer to manage the routing of jobs to the print  
3 engine and a spooler, a job control function interface, a pipeline interface, an operations  
4 panel interface and a pull print interface.

1           103.   (New) The method of claim 101 further comprising providing by the  
2 interface an ability for components to process a job according to requirements of the  
3 component and reporting job attributes and processing status of the job for common  
4 access by other components.

1           104.   (New) The method of claim 101 further comprising providing by the  
2 interface access to maintained job variable to the components.

1           105.   (New) The method of claim 101 further comprising providing by the  
2 interface to a component access to common variables, the components presenting job  
3 attributes or status to the interface.

1           106.   (New) The method of claim 105 wherein the attributes are presented  
2 according to requirements dictated by the interface.

1           107.   (New) The method of claim 101 wherein the interface provides the ability  
2 for components to create job entries, obtain and set job attributes, manipulate the state  
3 and status of jobs in the system, and obtain job ordering information pertinent to the  
4 calling component.

1           108.   (New) The method of claim 101 wherein the repository provides a global  
2 view of jobs within the printer, the global view includes an actively printing job, jobs in  
3 the process of being spooled, jobs on the spool queue, and jobs on the pull print queue.

1           109. (New) The method of claim 101 wherein the interface accommodates  
2           implementation of port connection managers and pass job information from a port  
3           connection manager to the repository.

1           110. (New) The method of claim 101 wherein the interface cancels jobs.

1           111. (Original) The method of claim 110 wherein a cancelled job comprises a  
2           current job.

1           112. (New) The method of claim 110 wherein a cancelled job comprises a job  
2           having a selected attribute.

1           113. (New) The method of claim 101 further comprising providing logical  
2           views to obtain a next job to be processed by a component and to obtain a list of all jobs  
3           in the order that they are processed.

1           114. (New) The method of claim 101 further comprises obtaining a Job ID,  
2           performing a query for attributes of a job, updating job attributes, canceling jobs,  
3           providing logical views of a job, handling printer events, getting attributes of the printer  
4           and setting printer attributes by the job monitor.

1           115. (New) The method of claim 114 wherein the attributes are updated  
2           through the job monitor.

1           116.   (New) The method of claim 114 wherein the job monitor provides the  
2   ability for any component to set job attributes.

1           117.   (New) The method of claim 114 wherein the job monitor uses job states to  
2   control the flow of jobs.

1           118.   (New) The method of claim 114 further comprising determining a next  
2   job to and determining valid states for a call by the component.

1           119.   (New) The method of claim 118 further comprising maintaining a valid  
2   state for a multiplexer.

1           120.   (New) The method of claim 119 wherein the maintaining a valid state for  
2   a multiplexer further comprises:

3           placing an incoming job into an unknown state when a job identification is  
4   requested;

5           placing the incoming job in the Pull Print queue when the job is stop-flowed at a  
6   port connection manager waiting for access to the printer because a print engine is  
7   processing another job; and

8           selecting the incoming job and processing the job according to whether the job  
9   must be spooled, may spool or must print.

1           121.   (New) The method of claim 120 wherein the incoming job is routed to the  
2   print engine or the spooler according to which comes first when the job is a job that may  
3   spool.

1           122.   (New) The method of claim 120 wherein the incoming job is placed in a  
2   pending spooler when the job is a job that must be spooled.

1           123.   (New) The method of claim 120 further comprising indicating a done  
2   state for the multiplexer when the job has been printed.

1           124.   (New) The method of claim 118 further comprising maintaining a valid  
2   state for a spooler.

1           125.   (New) The method of claim 124 wherein the maintaining a valid state for  
2   a spooler further comprises:

3           receiving a job identification request;

4           entering a not spooled state when the spooler has not yet processed the job;

5           entering a spooling, can despool state when the job is being written to the spool  
6   device thereby allowing the job to be selected for despooling at any time;

7           entering a spooling, despooling state when the job is being written to the spool  
8   device and is also being read from the spool device;

9           entering a waiting to despool state when the end of the job has been received;

10          entering a despooling state when the job is being read from the spool device and  
11   written to the multiplexer; and

12          entering the done state when the job is finished being processed by the spooler.

1           126.   (New) The method of claim 125 wherein a job that is printed directly and  
2   not processed by the spooler remains in the not spooled state.

1           127.   (New) The method of claim 118 further comprising maintaining a valid  
2   state for an interpreter.

1           128.   (New) The method of claim 127 wherein the maintaining a valid state for  
2   a interpreter further comprises:

3           entering a waiting for data stated when job processing by the interpreter has  
4   started;

5           entering an interpreting state when the job is being processed by the interpreter;

6   and

7           entering a done state when the job is finished being processed by the interpreter.

1           129.   (New) The method of claim 118 further comprising maintaining a valid  
2   state for a print engine.

1           130.   (New) The method of claim 129 wherein the maintaining a valid state for  
2 a print engine further comprises:

3           entering a waiting for pages state when job processing by an interpreter has not  
4 yet started;

5           entering a waiting for pages state when the job has started;

6           entering the pages queued state when one or more pages for the job have been  
7 created by the interpreter and written to the page buffer;

8           entering the pages printing state when one or more pages for the job have been  
9 delivered to the output tray; and

10          entering the done state when the last page for the job has been delivered to the  
11 output tray.

1           131.   (New) The method of claim 101 further comprising handling incoming  
2 jobs with a port connection manager, wherein the port connection manager calls to a  
3 multiplexer to process the job.

1           132.   (New) The method of claim 101 further comprising deciding whether to  
2 assign a job to the printer, whether to assign a job to a spooler, whether the job must wait  
3 for available resources or whether the job cannot be processed.

1           133.   (New) The method of claim 101 further comprising requesting from a job  
2 monitor a job identification prior to processing the job by a multiplexer.

1           134. (New) The method of claim 133 further comprising storing the job  
2           identification in a job table and clearing the job identification from the table when an end  
3           of job is called by a port connection manager.

1           135. (New) The method of claim 101 further comprising examining by the job  
2           monitor process job states and variables to determine the correct response and to return  
3           an appropriate job identification for a job.

1           136. (New) The method of claim 101 further comprising providing an event  
2           registration to provide a methodology for a controller to indicate events to a job monitor,  
3           wherein the Job Monitor serves as the system focal point for tracking job related events  
4           as they occur during the course of an entire print process.

1           137. (New) The method of claim 136 further comprising defining events for  
2           the job monitor.

1           138. (New) The method of claim 101 further comprising providing a job  
2           monitor for addressing job processing complexity by viewing a job on a higher  
3           conceptual plane rather than managing a collection of attributes and status variables that  
4           is unique for each data channel.

1           139. (New) The method of claim 101 further comprising providing a job  
2           monitor for providing a common method of accessing the variables associated with a job  
3           for the components.



1           140.   (New) An apparatus for providing printer recognition and management of  
2 a print job entity, comprising:

3           a repository of attributes and status information associated with each print job that  
4 passes through a printer system;

5           an interface to a plurality of components, the interface providing access to the  
6 attributes and status information in the repository by the plurality of components; and

7           a job monitor for managing the repository of attributes and status information  
8 associated with each print job, for responding to a call by a printer component and for  
9 managing interactions between printer components in order to control the processing of  
10 the job;

11          wherein the job monitor fetches jobs in an order that is dependent upon the calling  
12 component.

1           141.   (New) The apparatus of claim 140 wherein the interface comprises at least  
2 one of a Web Page channel, a multiplexer to manage the routing of jobs to the print  
3 engine and a spooler, a job control function interface, a pipeline interface, an operations  
4 panel interface and a pull print interface.

1           142.   (New) The apparatus of claim 140 wherein the interface provides an  
2 ability for components to process a job according to requirements of the component and  
3 reports job attributes and processing status of the job for common access by other  
4 components.

1           143.   (New) The apparatus of claim 140 wherein the interface provides access  
2 to maintained job variable to the components.

1           144.   (New) The apparatus of claim 140 wherein the interface provides a  
2 component access to common variables, the components presenting job attributes or  
3 status to the interface.

1           145.   (New) The apparatus of claim 144 wherein the attributes are presented  
2 according to requirements dictated by the interface.

1           146.   (New) The apparatus of claim 140 wherein the interface provides the  
2 ability for components to create job entries, obtain and set job attributes, manipulate the  
3 state and status of jobs in the system, and obtain job ordering information pertinent to the  
4 calling component.

1           147.   (New) The apparatus of claim 140 wherein the repository provides a  
2 global view of jobs within the printer, the global view includes an actively printing job,  
3 jobs in the process of being spooled, jobs on the spool queue, and jobs on the pull print  
4 queue.

1           148.   (New) The apparatus of claim 140 wherein the interface accommodates  
2 implementation of port connection managers and pass job information from a port  
3 connection manager to the repository.

1           149.   (New) The apparatus of claim 140 wherein the interface cancels jobs.

1           150.   (New) The apparatus of claim 149 wherein a cancelled job comprises a  
2   current job.

1           151.   (New) The apparatus of claim 149 wherein a cancelled job comprises a  
2   job having a selected attribute.

1           152.   (New) The apparatus of claim 140 wherein the a repository and interface  
2   are provided by a job monitor, the job monitor further providing logical views to obtain a  
3   next job to be processed by a component and to obtain a list of all jobs in the order that  
4   they are processed.

1           153.   (New) The apparatus of claim 140 wherein the job monitor obtains a Job  
2   identification, performs a query for attributes of a job, updates job attributes, cancels  
3   jobs, provides logical views of a job, handles printer events, gets attributes of the printer  
4   and sets printer attributes.

1           154.   (New) The apparatus of claim 153 wherein the attributes are updated  
2   through the job monitor.

1           155.   (New) The apparatus of claim 153 wherein the job monitor provides the  
2   ability for any component to set job attributes.

1           156.   (New) The apparatus of claim 153 wherein the job monitor uses job states  
2   to control the flow of jobs.

1           157.   (New) The apparatus of claim 153 wherein the job monitor determines a  
2   next job to process, the component determining valid states for a call.

1           158.   (New) The apparatus of claim 157 further comprising a multiplexer.

1           159.   (New) The apparatus of claim 158 wherein the valid states for a  
2   multiplexer further comprise:

3           an unknown stated for when a job identification is requested; and

4           a pull print queue state for the job when the job is stop-flowed at a port

5   connection manager waiting for access to the printer because a print engine is processing  
6   another job;

7           wherein the multiplexer receives the job and selects to place the job in a job must  
8   be spooled state, a may spool state or must print state.

1           160.   (New) The apparatus of claim 159 wherein the multiplexer routes the  
2   incoming job to the print engine or the spooler according to which becomes available first  
3   when the job is a job that may spool.

1           161.   (New) The apparatus of claim 159 wherein the multiplexer places an  
2   incoming job in a pending spooler when the job is a job that must be spooled.

1           162.   (New) The apparatus of claim 159 wherein the multiplexer enters a done  
2   state for the multiplexer when the job has been printed.

1           163.   (New) The apparatus of claim 157 further comprising a spooler.

1           164. (New) The apparatus of claim 163 wherein the spooler receiving a job  
2           identification request, enters a not spooled state when the spooler has not yet processed  
3           the job, enters a spooling, can despool state when the job is being written to the spool  
4           device thereby allowing the job to be selected for despooling at any time, enters a  
5           spooling, despooling state when the job is being written to the spool device and is also  
6           being read from the spool device, enters a waiting to despool state when the end of the  
7           job has been received, enters a despooling state when the job is being read from the spool  
8           device and written to the multiplexer and enters the done state when the job is finished  
9           being processed by the spooler.

1           165. (New) The apparatus of claim 164 wherein a job that is printed directly  
2           and not processed by the spooler remains in the not spooled state.

1           166. (New) The apparatus of claim 157 further comprising an interpreter.

1           167. (New) The apparatus of claim 166 wherein the interpreter enters a waiting  
2           for data stated when job processing by the interpreter has started, enters an interpreting  
3           state when the job is being processed by the interpreter and enters a done state when the  
4           job is finished being processed by the interpreter.

1           168. (New) The apparatus of claim 157 further comprising a print engine.

1           169. (New) The apparatus of claim 168 wherein the print engine enters a  
2     waiting for pages state when job processing by an interpreter has not yet started, enters a  
3     waiting for pages state when the job has started, enters the pages queued state when one  
4     or more pages for the job have been created by the interpreter and written to the page  
5     buffer, enters the pages printing state when one or more pages for the job have been  
6     delivered to the output tray and enters the done state when the last page for the job has  
7     been delivered to the output tray.

1           170. (New) The apparatus of claim 140 wherein the a repository and interface  
2     are provided by a job monitor, the job monitor further handling incoming jobs with a port  
3     connection manager, wherein the port connection manager calls to a multiplexer to  
4     process the job.

1           171. (New) The apparatus of claim 140 wherein the a repository and interface  
2     are provided by a job monitor, the job monitor further deciding whether to assign a job to  
3     the printer, whether to assign a job to a spooler, whether the job must wait for available  
4     resources or whether the job cannot be processed.

1           172. (New) The apparatus of claim 140 wherein the a repository and interface  
2     are provided by a job monitor, the job monitor receiving a request for a job identification  
3     prior to processing the job by a multiplexer.

1           173. (New) The apparatus of claim 172 wherein the job identification is stored  
2 in a job table, the job monitor clearing the job identification from the table when an end  
3 of job is called by a port connection manager.

1           174. (New) The apparatus of claim 140 further comprising a job monitor for  
2 examining process job states and variables to determine the correct response and to return  
3 an appropriate job identification for a job.

1           175. (New) The apparatus of claim 140 further comprising a job monitor for  
2 serving as a focal point for tracking job related events as they occur during the course of  
3 an entire print process.

1           176. (New) The apparatus of claim 175 further comprising events definitions  
2 for the job monitor.

1           177. (New) The apparatus of claim 140 further comprising a job monitor for  
2 addressing job processing complexity by viewing a job on a higher conceptual plane  
3 rather than managing a collection of attributes and status variables that is unique for each  
4 data channel.

1           178. (New) The apparatus of claim 140 further comprising a job monitor for  
2 providing a common method of accessing the variables associated with a job for the  
3 components.

1           179.   (New) An article of manufacture comprising a program storage medium  
2   readable by a computer, the medium tangibly embodying one or more programs of  
3   instructions executable by the computer to perform a method for providing printer  
4   recognition and management of a print job entity, the method comprising:  
5           establishing a repository of attributes and status information associated with each  
6   print job that passes through a printer system;  
7           providing an interface to a plurality of components to allow access to the  
8   attributes and status information in the repository by the plurality of components;  
9           establishing a job monitor for managing the repository of attributes and status  
10   information associated with each print job, for responding to a call by a printer  
11   component and for managing interactions between printer components in order to control  
12   the processing of the job; and  
13           fetching jobs, using, the job monitor, in an order that is dependent upon the  
14   calling component.